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STONE CASTING AND PRODUCTS

Engr L. Popilov

The processing of stone by melting was begun in the USSR about 20 years ago. Numerous experiments have been made since then, and it is now possible to produce cast-stone products of desired shapes and qualities. Cast stone has proved to be an excellent material for the chemical industry as it resists corrosion. It can remain indefinitely in boiling acids without undergoing any changes, whereas metals under the same conditions are corroded in a few seconds or minutes. The use of cast stone in the chemical industry has released many thousand tons of valuable metals. Cast-stone products are far more durable than natural stone products and even some metal products. A cast-stone sample offers more resistance to compression and fission than a cast-iron sample having the same weight.

It is possible to produce various kinds of stone alloys and by varying the composition of the casts, they can be given different colors, the necessary degree of conductivity, refractoriness, acid resistance, and many other properties.

Cast stone can be used for producing water pipes, oil pipes, sewer pipes, drain pipes, and acid-resistant pipes. Cast-stone blocks are more durable and less expensive than many others road-building materials used at present. Certain types of cast stone can be ground to a fine powder and are then used for the production of refractory and acidproof types of cement and concrete. By filling steel frames with fused stone, it was possible to create a new material, steel stone, which combines the properties of steel and stone, similar to concrete. Cast stone can also be used to produce bricks and girders, monolithic blocks and construction parts, machine bases, consumers' goods, kitchen utensils and dishes, art objects and ornaments.

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The stone-casting plant /in Moscow ?/ was founded about 15 years ago. The smelting furnace is similar to a regular open-hearth furnace, the only difference being that there are shelves of refractory brick along the sides of the tank. These shelves are necessary because of the fact that stone is a poor heat conductor and if it were thrown directly into the tank like metal, the lower layers would not melt. Therefore the stone is loaded on the shelves to be heated and then it drops into the tank when melted.

A difficult problem was the joining together of several cast-stone structures. None of the existing types of glue or cement were suitable for this purpose. After a great deal of experimentation, Soviet scientists and engineers discovered the required type of cement. It is made of fused diabase, one of the varieties of cast stone. A very fine powder of cast stone was used as the base of the new diabase cement.

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